

This suspension bridge in Miller County was constructed by Joe Dice, an engineer who designed dozens of similar bridges in Missouri around the turn of the century.

For a Free Bridge, Call MODOOT

By Matt Hiebert

How Old Bridges Get New Lives

Missouri's bridges span more than roadways, rivers and ravines. They also connect us to the past.

Nearly every bridge in the state has a story to tell, whether it's about the routes our ancestors once traveled or the engineering methods of a bygone era. That's why, when the time comes for an older bridge to be replaced, the Missouri Department of Transportation makes every effort to preserve this link to history.



BOLLMAN



BOWSTRING ARCH-TRUSS



BURR ARCH TRUSS

Through the efforts of MoDOT's cultural resources staff, the department helps to preserve and reuse historic bridges by making them available to communities and organizations that may need a somewhat used, older bridge.

Over the years, MoDOT has supplied guidance, historical information and technical data to hundreds of groups and individuals interested in the preservation and adaptive reuse of historic bridges in Missouri and other states.

"For a long time, people recognized historic bridges, but there wasn't much enthusiasm for them," says

Randy Dawdy, MoDOT historic bridge coordinator. "But that all began to change back in the 1960s."

From Catastrophe to Catalog

In 1967, 46 people were killed in the collapse of the Silver Bridge, which spanned the Ohio River between Kanagua, Ohio, and Point Pleasant, Va. The tragedy

raised public awareness of structurally deficient bridges nationwide, and state governments began to take a careful look at their older bridges.

"As they did that, they realized that many of the older bridges have historical significance," Dawdy explains. "The federal and state governments began to consider the possibility of preserving them rather than just tearing them out."

By 1987, with the passage of the Surface Transportation and Uniform Relocation Assistance Act, many historic bridges were given a second chance. The act required all states to inventory their bridges, and rehabilitate, reuse and relocate the historic ones.

Today, most states have complete, or nearly complete, historic-bridge inventories.

"Here is ours," Dawdy says, tapping a three-foot-thick, multi-volume catalog of Missouri bridges. "It looks at over 23,000 bridges and boils them down to the most potentially significant."

Although still being reviewed by participating agencies, the 1996 draft of the Missouri Historic Bridge Inventory includes 1,800 bridges that possibly could have historic significance. About 200 of those are eli-

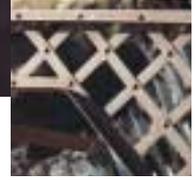


gible for, or already listed on, the National Register of Historic Places. Another 100 are still under consideration.

These bridges primarily were evaluated in terms of their historical and technological significance. Structural integrity also was considered. When one of these bridges has to be replaced, whether it's owned by a county, city or the state, some crucial decisions have to be made.



The Riverfront Bridge in St. Joseph was given to the city by Buchanan County and is now part of a bicycle-pedestrian trail.



The Georgia City Bridge after being moved to Webb City where it will eventually cross a small stream in King Jack Park.

“The priority is to keep using it, either for vehicular purposes or as a pedestrian facility,” Dawdy explains. If this isn’t feasible, then the bridge is advertised for adaptive reuse.

In that case, MoDOT or the government body that controls the structure will advertise the bridge in newspapers, engineering periodicals, preservation publications and on the Internet.

Interested parties may submit a proposal for reusing the bridge in a way that preserves its historical significance and physical integrity. This means the bridge cannot just be torn down and sold as scrap metal.

“Whoever ends up with the bridge has to keep in mind its historic nature and make it accessible to the public,” Dawdy explains.



The Georgia City Bridge in its original location in Jasper County crossing the Spring River.

Many of Missouri's historic bridges are still in use – they're just not in their original locations. Some have been preserved in parks and historic sites. Some have been moved to private property. And others have found new uses right where they stand.

It's Fine Where It Is

The preferred option is to reuse a bridge in place. This will work only if the new bridge will be built to be compatible with the older bridge, meaning, on navigable streams, both old and new bridge piers must line up so ships and barges can pass easily.

One very visible example of this option is the Eads Bridge, which is maintained by the City of St. Louis.

"The Eads Bridge played a significant role in the development of North America," Dawdy says. "It was built between 1867 and 1874 as a major railroad link across the Mississippi River. Today it still functions as a light-rail and limited pedestrian bridge."

While the Eads Bridge is one of the more famous examples in Missouri, Dawdy says there are literally scores of "used-in-place" bridges dotting the countryside.

Put It There

If for some reason a historic bridge cannot be left in place, the next option is to find it a new home. That may require moving

The Eads Bridge in St. Louis is an excellent example of a bridge reused in place. Once a vital rail link over the Mississippi River, today it serves as a light-rail and pedestrian bridge.

PHOTOS PROVIDED BY MODOT CULTURAL RESOURCES. HELICOPTER PHOTO BY MIKE WRIGHT



It's a Bird, It's a Plane, It's a ... Bridge?

By Matt Hiebert

Last January, residents of Caldwell County saw an unusual flying object. No, it wasn't a UFO. It was something even stranger – a flying bridge!

As part of the historic bridge reuse and relocation program, officials from the city of Polo and Caldwell County worked together to find the structure a new home.

"My wife is the president of the Polo community betterment group," says Gary Carr, who helped coordinate the bridge move for the city. "They were putting in a walking trail around the city park and needed a bridge to cross a pond."

After making some phone calls, Carr discovered that Caldwell County had an old bridge that fit Polo's needs.



The bridge had been straddling Otter Creek south of Hamilton, connecting two ends of an abandoned road. Carr called MoDOT for advice and historical data on the bridge.

"Mr. Carr contacted me and I was able to provide some background on the bridge," says Bob Burnett, bridge engineer for MoDOT's Northwest District. "We found out that the bridge was indeed a historical structure because of its bowstring truss configuration."

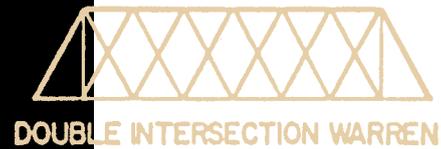
The next step was to figure out how to actually move it.

"When we started this project, we heard that the National Guard would take on jobs like this as training exercises," Carr says. "The Missouri National Guard didn't have the right equipment, so they put me in touch with guard units in other states."

Carr made a few more calls and learned that the Iowa National Guard could move the bridge with one of its twin-blade Chinook helicopters. The structure was removed from its piers and placed in an adjacent field so the helicopter could access it easily.

In January, the big chopper flew down from Iowa, picked up the 15,000-pound structure and flew it 12 miles to the town of Polo where it has found a new life, crossing a small pond in a community park. ■

Historic Bridges That Crossed Over



Many other historic bridges in Missouri have been saved from the scrap heap by the relocation and reuse program. Here are a few more from across the state that had happy endings:

Built in 1871, when the Georgia City Bridge was finally closed to traffic in 1986 it was the oldest known all-metal vehicular bridge in the state. The bowstring-arch style bridge will eventually cross a small stream in King Jack Park in Joplin, several miles away from its original site.



The Redings Mill Bridge is a concrete open-spandrel arch bridge originally constructed in 1930 and recently given to Newton County for use on a pedestrian route. It is an excellent example of a bridge used in place.



Legendary suspension-bridge builder, Joe Dice, constructed the Upper Bridge across the Osage River at Warsaw in 1928. Closed to traffic in 1979, the structure has been preserved in place. Recently, it was added to the National Register of Historic Places and deeded to the city of Warsaw.



The Buffalo Ridge Road Bridge is a Pratt/Warren pony-truss bridge originally built over Cedar Fork Creek in Franklin County during the early 1920s. Ownership was transferred to an individual who will re-erect the bridge over a creek on private property. The bridge was dismantled and moved about eight miles from its original location.



the whole bridge, or at least a significant portion of it. This obviously is a formidable undertaking, considering some of these structures are hundreds of feet long and weigh many tons.

To move a larger bridge, the planning and logistics involved can be staggering. Techniques vary based on budgets, equipment and time.

“If you match-mark all the pieces, you can take the bridge apart like a giant Erector Set,” Dawdy explains. “Then you load it on a truck, take it to where you want it and put it back together again.”

For the most part, that method works fine. Yet sometimes the situation may call for old-fashioned ingenuity. Take, for instance, the 1883 Bonanza Bridge in Caldwell County.

Several years ago, county officials decided to replace the historic bridge with a newer, safer and wider one. To preserve the old bridge, the county tapped into funds that were originally set aside for its demolition.

The problem was the bridge’s cumbersome length of 187 feet. The plan was to move the bridge only a few hundred feet, making disassembly and reassembly too expensive. So county officials came up with another plan.

“They decided to move it 300 feet, all in one piece,” Dawdy says. “They built a temporary gravel road across the creek bed, used a bulldozer and two cranes, and moved it the entire distance, 10 feet at a time.”

Today that old bridge stands on permanent concrete mounts in a field next to the new bridge.

Of course, not all bridge relocations require such creativity. Some of them literally can

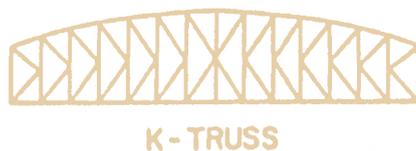
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The Bonanza Bridge in Caldwell County before adaptive reuse.



The Bonanza Bridge after it was saved from the scrap heap.



Continued from page 6

be loaded in one piece on the back of a truck and delivered to their new spot. That's how Carroll County moved one of its historic bridges, a tiny Pratt Bedstead-truss bridge from the early 1900s, to the front yard of the Carroll County Historical Society in Carrollton, where it stands today.

“At about 15 feet long, it’s the smallest preserved historic bridge I know of in the state,” Dawdy says. “It’s used for instructional purposes, and as a small stage for outdoor lectures and presentations.”

When All Else Fails

Despite the fact that these bridges are offered for free to any qualified recipient, sometimes there simply are no takers. It may be that, as in the case of the old Mark Twain Memorial Bridge in Hannibal, a bridge is just too gigantic for any practical use.

“The larger bridges very seldom get any takers because of the cost of preservation and relocation,” Dawdy says. “Your name would have to be Gates, Trump or Walton to afford that.”

At that point the only viable alternative is “preservation on paper.” This means that a historic bridge is extensively researched, photographed and mechanically drawn to scale. Historic narratives, along with the photographs and drawings, are placed in archives such as libraries, historical societies, and sometimes in the Library of Congress. In some cases, pieces of the structure, such as its nameplate, are salvaged for display in a museum.

The Future of the Past

In the end, most historic bridges end up being torn down or taken away.

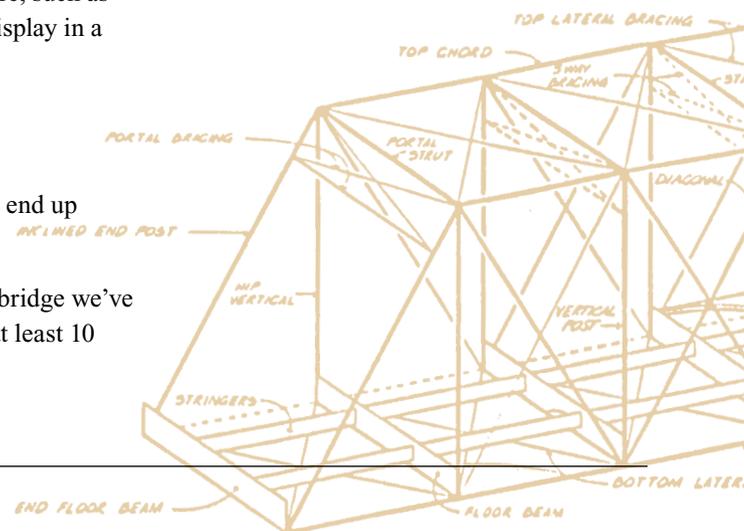
“I’d guess that for every historic bridge we’ve physically preserved, there are at least 10

more we’ve had to demolish,” Dawdy says. “Our historic bridges are going down the tubes fast.”

However, because interest in preserving historic bridges is growing nationwide, Dawdy says several states have come up with innovative ways to save them.

“Nebraska has a system to disassemble and store its historic bridges until somebody wants one,” Dawdy says. “The state actually puts out a little catalog with photos.”

Perhaps one of the most innovative preservation programs can be found in Michigan. Calhoun County actually has constructed a park for its historic bridges, similar to an endangered species preserve. Several different kinds of bridges cross a creek in the



In The Mode

The Transportation Quiz

Shortest, Longest, Oldest, First!

By Melissa Black



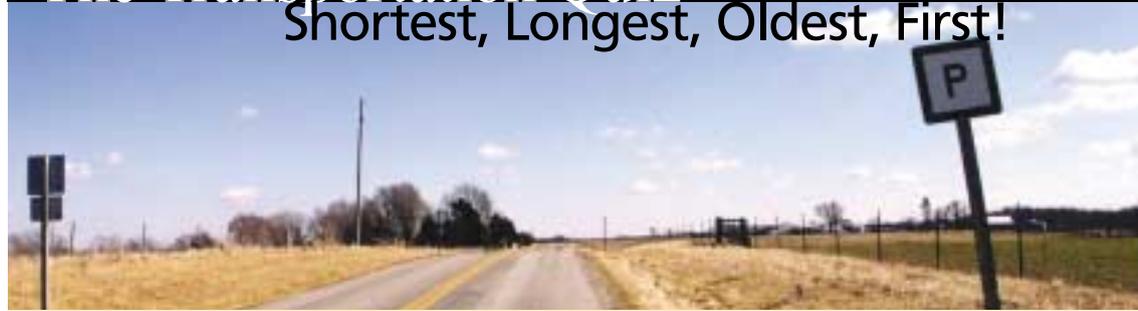
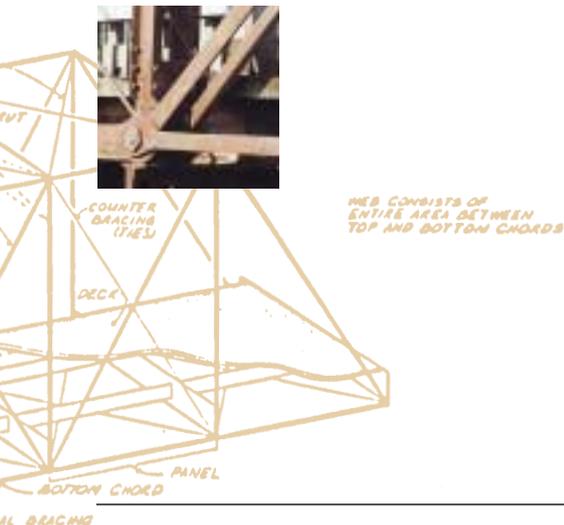
This 15-foot bridge in Carroll County is one of the smallest structures saved by the program.

center of the park. When it's completed, visitors will be able to follow a zigzag path-way over the bridges, viewing displays that describe the history and significance of each one.

Currently, Missouri does not have such sophisticated ways of dealing with its his-toric bridges. But, Dawdy says, "we are working on it."

In the meantime, several historic bridges in Missouri need a new home. Call MoDOT for lengths, locations and more details. And remember: They're absolutely free! ■

Matt Hiebert is a public affairs specialist at MoDOT General Headquarters.



Test your knowledge of some Missouri and MoDOT milestones.

- 1 In 1808, the King's Highway became the first legally designated road west of the Mississippi River. Where did it run?
 - a. St. Louis to northeast Missouri
 - b. St. Louis to southeast Missouri
 - c. Kansas City to northwest Missouri
 - d. Kansas City to southwest Missouri
- 2 The first speed limit in Missouri was set in 1903. What was it?
 - a. 20 mph
 - b. 16 mph
 - c. 9 mph
 - d. 5 mph
- 3 How many highway miles are included in the MoDOT system?
 - a. 101,263 miles
 - b. 84,722 miles
 - c. 55,414 miles
 - d. 32,333 miles
- 4 How many total miles are there in Missouri, including county and city highway miles?
 - a. 155,372 miles
 - b. 119,690 miles
 - c. 102,884 miles
 - d. 91,042 miles
- 5 The shortest road in Missouri is Route P in Wooldridge in Cooper County (pictured above). How long is it?
 - a. .081 miles
 - b. .075 miles
 - c. .055 miles
 - d. .046 miles
- 6 The longest road in Missouri is Route 61 from Iowa to Arkansas. How long is it?
 - a. 814 miles
 - b. 599 miles
 - c. 393 miles
 - d. 262 miles
- 7 Though it no longer exists, where was Missouri's earliest known bridge located?
 - a. Over the Petite Reviere (Mill Creek) in St. Louis
 - b. Over the Des Peres River in St. Louis
 - c. Over the Mississippi River in Ste. Genevieve
 - d. Over the Missouri River in St. Charles
- 8 When was that bridge first noted in the town records?
 - a. 1801
 - b. 1782
 - c. 1750
 - d. 1711
- 9 The oldest bridge on the state system is located on Route V in Cooper County. When was it built?
 - a. 1905
 - b. 1900
 - c. 1895
 - d. 1880
- 10 The longest bridge in Missouri is the Poplar Street approach viaduct on Interstate 64 in St. Louis. It starts at Union Station and ends at the Mississippi River. How long is it?
 - a. 14,432 feet
 - b. 12,619 feet
 - c. 9,021 feet
 - d. 7,847 feet
- 11 The longest bridge over water in Missouri is the Mississippi River bridge on Interstate 155 at Caruthersville. How long is it?
 - a. 9,210 feet
 - b. 7,102 feet
 - c. 6,399 feet
 - d. 4,489 feet

Answers: 1 - b; 2 - c; 3 - d; 4 - a; 5 - d; 6 - c; 7 - a; 8 - a; 9 - a; 10 - d; 11 - b.

Melissa Black is the public affairs coordinator for MoDOT Operations.